

Appendix D

Letter from the Department of Health Services

DEPARTMENT OF HEALTH SERVICES

2151 BERKELEY WAY
BERKELEY, CA 94704-1011



October 25, 2000

Richard Sykes
Manager of Water System
EBMUD
P.O. Box 24055
Oakland, CA 94623-1055

Dear Mr. Sykes:

**EBMUD (District)— Supplemental Water Supply Project and Department's
Position on the Expected Level of Treatment**

We have reviewed your letter of September 26, 2000 and the enclosed Technical Memorandum concerning the Supplemental Water Supply Project with the various proposed diversion scenarios from the American River, Sacramento River and the Delta. The District has requested that we comment on two main issues that relate to this project that will impact the treatment alternative selected by the District. The first issue is whether the Department will allow blending of American River, Sacramento River or Delta water with Mokelumne Aqueduct water prior to its existing in-line filtration plants. The second issue relates to use of giardia and cyptosporidium analytical information in place of total/fecal coliform analyses to characterize the quality of a water supply source.

In regards to the first issue, the Surface Water Treatment Regulation (SWTR) requires each water supplier using an approved surface water supply to provide multi-barrier treatment that reliably ensures at least: 1) a total of 99.9 % (3 log) reduction in giardia cysts through filtration and disinfection; and 2) a total of 99.99% (4 log) reduction of viruses through filtration and disinfection. The Enhanced Surface Water Treatment and Stage I Disinfection Byproduct Regulation (IESWTR) that becomes effective on January 2002 requires a 3 log of cyptosporidium reduction. The District's current in-line treatment facilities (w/o coagulation or sedimentation) are defined as alternative treatment technology under the SWTR/IESWTR and as such the District is required to demonstrate equivalency with approved treatment technologies (e.g., conventional filtration, direct filtration, etc.) before the Department will issue the District a permit for any new source of supply. The District's in-line treatment facilities are currently approved for treating exclusively Mokelumne Aqueduct water based on initial studies conducted at Orinda Water Treatment Plant in 1991.

The Department considers the American River, Sacramento River, and the Delta sources to be of lower quality than the Mokelumne River water due to the impacts of agricultural and urban runoff and wastewater discharges into these water bodies. Use of these sources as a potable water supply requires a higher level of treatment that can be afforded by the current in-line treatment plants. The Department typically requires conventional treatment (coagulation, sedimentation, filtration, and disinfection) for comparable water sources. Before the Department would consider approving any proposal using the existing in-line treatment facilities to treat a blend of American River, Sacramento River, or Delta water with Mokelumne River water without a

coagulation/sedimentation (pretreatment) step, the District would have to meet the following conditions: 1) conduct demonstration study over a 12 month period to show that the treatment facilities can meet the removal requirements for giardia, cytosporidium, and viruses specified by the SWTR/IESWTR for alternative treatment technologies; 2) maintain a minimum blending or dilution ratio of 20:1 (Mokelumne Aqueduct water to American River/Sacramento River/Delta water) before filtration treatment at the existing in-line facilities. The dilution ratio affords a factor of safety that is necessary if there is no coagulation/sedimentation process before the in-line treatment facilities. The Technical Memorandum specifies that blending ratios in excess of 10:1 are not achievable during drought years which may make the blending alternative a non-viable option.

In regards to the second issue, the Department has always used total and fecal coliform data to characterize the extent of sanitary hazards to the raw water supply and to determine the safety and potability of the treated water supply. By definition, total coliform are a group of bacteria found in the intestines of warm blooded animals (including humans) and also found in plants, soil, air and water. Fecal coliforms are a specific class of bacteria that only inhabit the intestines of warm-blooded animals. The presence of coliform bacteria is an indication that the water is polluted and may contain pathogenic organisms. The absence of coliform in the treated water indicates that the water is free of pathogenic organism. Laboratory methods for total and fecal coliform analyses are relatively inexpensive and conducive to treatment plant operation. In contrast, testing for specific pathogenic microorganisms such as cytosporidium and giardia is very time-consuming and requires special techniques and equipment coupled with the fact that current laboratory methods are unreliable and tend to under report the number of giardia and cytosporidium cysts that are in the environment. Consequently, most water utilities are unable to collect enough meaningful data to make assessments of the safety of the water supply in regards to cytosporidium and giardia exposure. In California, very few water systems (including Delta supply systems) have been able to detect significant levels of cytosporidium and giardia in the raw water supply even though we expect it to be present. Therefore, the Department can not rely on cytosporidium and giardia data alone for determining source water quality of a water supply source.

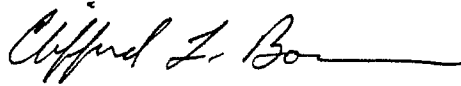
The Department's current policy is to use a number of factors to determine the adequacy of surface water source as a drinking water supply and treatment that will be necessary to comply with state requirements: 1) source water quality (total coliform, fecal coliform, turbidity, etc.); 2) actual and potential impacts of domestic, agricultural, recreational, and commercial activities on the watershed; 3) watershed management and protection activities. The three water source alternatives being considered by District, the American River, Sacramento River and the Delta, have lower water quality than the Mokelumne Aqueduct water due to agricultural and urban runoff and wastewater discharges into these water bodies. Total coliforms and fecal coliform levels are significantly higher in the American River, Sacramento River and Delta diversion sites than the Mokelumne Aqueduct water. These sources will require a higher level of pathogen protection via disinfection and/or physical removal. The pretreatment alternatives for American River and Sacramento River described in Technical Memorandum coupled with the existing in-line treatment facilities provide comparable treatment scheme to conventional treatment in order to satisfy the requirements of the

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SWTR and IESWTR. No demonstration study is required for these treatment alternatives.

If there are any questions concerning this matter, please contact Melvin Yee at (510) 540-2151.

Sincerely,

A handwritten signature in cursive script, reading "Clifford L. Bowen", followed by a horizontal line.

Clifford L. Bowen, P.E.
District Engineer
San Francisco District
Drinking Water Field Operations Branch

Cc: Alameda County Health Department

Contra Costa County Health Department